

Complications of Peptic Ulcer in the Aged

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INCREASING INTEREST is being shown in the care of aged patients, owing largely to improved methods that have reduced the hazards of operations on older persons. Cole⁴ and others^{1,3,6} have observed that major operations may be well tolerated by elderly patients unless the procedure be of great magnitude, is done in an emergency or is associated with severe concurrent disease. This interest is also a result of the pronounced change in the population of this country during the past 50 years. At the beginning of this century only one in every 25 persons was 65 years of age or over; now the ratio is about one in 12.²

Although peptic ulcer has been considered a disease of young and middle aged persons, there have been recent reports that more than 20 per cent of the patients admitted for hospital treatment of peptic ulcer are over 60 years of age.^{10, 11} At the Los Angeles County General Hospital during the 12 months ended June 30, 1954, some 35 per cent of the 964 patients admitted for conservative or surgical treatment of peptic ulcer were over 60 years of age. With a progressively increasing life expectancy it can be expected that this disease will continue to become more prevalent.

The etiological factors of this high incidence of peptic ulcer in the elderly are interesting to consider. One might expect that with the serenity of mind and the decreasing metabolic activity of old age, the factors that bring about ulcer would be reduced, but apparently this is not true. Vanzant¹² and co-workers studied the influence of age on gastric acidity and found only a slight decrease in the mean free acid after 60 years of age, but more of a decrease in men than in women. In studies of the gastric secretion of aged patients with peptic ulcer, it has been observed that in many cases there is pronounced elevation in gastric acidity. In addition to increased gastric acidity, vascular changes in the arteries of the stomach wall, as demonstrated by Meyer and Saphir,⁹ may decrease the normal blood supply and thereby impair the vitality of mucosal cells in the stomach and duodenum. In such circumstances ulceration might develop, even with normal

• Peptic ulcer is not an uncommon disease among the aged population. Thirty-five per cent of the patients admitted to the Los Angeles County General Hospital in a period of 12 months for treatment of peptic ulcer were more than 60 years of age.

The severity of this disease in the elderly group was evidenced by the high incidence of lethal complications requiring operation—one case in every four.

The mortality rate from operation for peptic ulcer complications is related to the factors of concurrent disease, the urgency of operation and the selection of a suitable operation.

acid values or with very little increase. Psychogenic factors such as loss of economic security, lessened ability to adjust to the stress of life, and other emotional disturbances may influence vascular and secretory change in the stomach and thus increase the susceptibility of the mucosa to injury.

In order to determine the severity of peptic ulcer in elderly persons, a study was made of the complications of peptic ulcer in 541 patients over 60 years of age who were operated on at the Los Angeles County General Hospital during a ten-year period from 1944 to 1953 (Chart 1). Approximately one patient in four above 60 years of age with peptic ulcer admitted to the hospital had severe complications requiring operation. It would appear from observations made on these elderly patients that they do not react to the pain of peptic ulcer as do younger patients, and they do not seek medical care until some severe complication occurs.

Perforation

Of the patients with acute perforation in this series, 68 per cent gave a history of previous symptoms of ulcer. Many of these patients complained of prodromal symptoms of pain or distress for a few days or weeks before the actual perforation occurred. The longer the duration of acute symptoms before operation, the higher the mortality rate. Over half of the patients had acute symptoms for more than 12 hours before operation was done, and in this group the mortality was twice as high as it was for those who had symptoms less than 12 hours. One factor in the delay of operation is the less dramatic onset of symptoms in many older patients, hence a tendency not to call a physician early. Another factor

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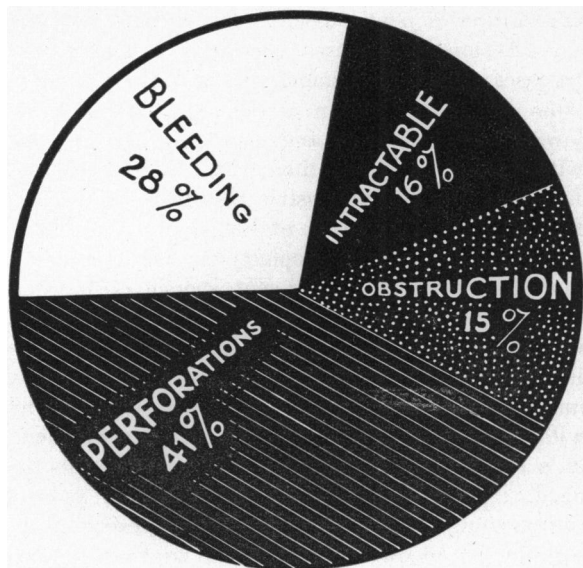


Chart 1.—Complications indicating operations for peptic ulcer in persons over 60 years of age—the incidence of occurrence in 541 cases of peptic ulcer at the Los Angeles County General Hospital during the years 1944 to 1953.

is that after the patient is in the hospital it may be several hours before a diagnosis is made, owing to atypical clinical signs and symptoms. The total mortality in 220 cases of perforation was 26 per cent (Table 1), a high rate for perforation, emphasizing once more that emergency procedures in the aged entail a much higher risk than elective operations. Simple closure was performed in 210 cases with a mortality rate of 25 per cent, but in the few in which gastric resection or additional procedures such as gastroenterostomy or pyloroplasty were performed, the mortality rate was 50 per cent. This was in sharp contrast to corresponding data on the patients who had subsequent elective operation for recurrence after perforation. In this latter group of 16 operations there were no deaths.

Hemorrhage

Bleeding was the most common complication. It occurred in 53.4 per cent of patients in this series. Hemorrhage was severe enough in 28 per cent of these cases to be the primary indication for operation. In approximately two-thirds (63.5 per cent) of this group the bleeding was classified as massive, as indicated by systolic blood pressure below 100 mm. of mercury, hemoglobin content 7.5 gm. or less per 100 cc. of blood, and bleeding not controlled with multiple transfusions. It has been observed that both the frequency and mortality of bleeding from peptic ulcer increases in direct proportion to the age of the patient.⁷ In cases in which hemorrhage including massive hemorrhage was the chief indication for gastric operation, the mortality

TABLE 1.—Data on surgical treatment of peptic ulcer perforation in patients over 60 years of age

Operation	Cases	Deaths	Mortality Rate (Per Cent)
Closure of perforation	210	52	25
With gastroenterostomy	3	3	50
With pyloroplasty	2	1	
With appendectomy	3	0	
Gastric resection	2	1	
Total	220	57	26

TABLE 2.—Data on operations for peptic ulcer hemorrhage in persons over 60 years of age

Operation	Cases	Deaths	Mortality Rate (Per Cent)
Gastric resection	106	27	25
Vagotomy and pyloroplasty	27	5	19
Wedge excision of ulcer (gastric)	5	1	
Vagotomy and gastroenterostomy	4	0	
Vagotomy	4	1	
Pyloroplasty	4	0	
Suture bleeding vessel	1	1	
Total	151	35	23

rate was 23 per cent, but when bleeding patients could be operated on electively during a remission the mortality rate was only 9 per cent.

The operative procedures most frequently used in the present series to stop bleeding were gastric resection and vagotomy with pyloroplasty (Table 2). Further observation is required for the evaluation of the long term results of the latter operation. The operative procedure of choice for hemorrhage is one which will stop the bleeding immediately and also provide definitive treatment of the ulcer. In acute bleeding duodenal ulcer a longitudinal incision is made through the anterior wall of the stomach and duodenum crossing the pyloric ring. A transfixion suture is taken in the base of the ulcer to control the point of bleeding. After the hemorrhage has been controlled at operation the condition of the patient usually responds sufficiently so that a definitive procedure may be performed. Occasionally even after control of the hemorrhage and multiple transfusions having been given during the operation, the patient's condition will not show improvement. In such a situation suture of the bleeding vessel without further definitive surgery is justified.

Obstruction and Intractability

Approximately one-third (31 per cent) of the patients in the series required operation for pyloric obstruction or intractability. Of the patients with obstruction, 26.8 per cent had a history of previous perforation and one patient had had three perforations before definitive operation was done. Gastric resection was the operative procedure most commonly carried out. It was associated with a mortality

TABLE 3.—Data on operations in cases of peptic ulcer obstruction and intractability in patients over 60 years of age

Operation	Cases	Deaths	Mortality Rate (Per Cent)
Gastric resection	111	12	10.8
Pyloroplasty and vagotomy	25	1	4.0
Gastroenterostomy	16	2	12.5
Gastroenterostomy and vagotomy	12	2	16.6
Vagotomy	4	0	
Closure penetrating ulcer	1	0	
Wedge resection ulcer (gastric)	1	0	
Total	170	17	10.0

rate of 10.8 per cent (Table 3). Duodenal stump leakage was present in three of the 12 patients who died following operation. When resection is attempted in the presence of considerable edema and induration surrounding the ulcerative area the risk of leakage is increased. The delay in wound healing present in the aged could be a further causative factor in the increase in duodenal stump leakage. The patients who had vagotomy with gastroenterostomy were considered the poorer risk patients, and the mortality rate was higher (Table 2).

The mortality resulting from surgical treatment of peptic ulcer in the aged is related to three important factors: The presence of concurrent disease, the urgency of operation and the selection of the operative procedure.

Concurrent disease may be controlled to some extent before operation, but continues to pose a constant risk. This is demonstrated by the fact that the mortality rate due to all causes in patients over 60 years of age at the Los Angeles County General Hospital is 18 per cent, only a little less than the mortality rate for patients in the same age group operated on for peptic ulcer—20 per cent.

The urgency of operation is a very large factor in the mortality of the patients operated on for peptic ulcer. Excluding the cases of perforation and massive hemorrhage in which operation had to be done in emergency, the mortality rate in which elective operation was done in the old age group is 9.7 per cent. It would appear from these findings that there could well be increased attention given to indications for elective operation in peptic ulcer of the elderly in an attempt to prevent the frequent serious complications.

The selection of an operative procedure is influenced by the condition of the patient, the urgency of operation, and the kind of complication. The data from this study would support the following criteria for choosing a suitable operation in the treatment of peptic ulcer complications. Gastric resection is a procedure which produces very satisfactory definitive results, but entails a considerable mortality rate if used routinely. Its use for acute

perforation of peptic ulcer in the aged is not indicated because of the associated high mortality rate. In cases of massive hemorrhage with the patient in poor condition, ligation of the bleeding point followed by pyloroplasty and vagotomy can be done with a lower mortality than with gastric resection. In elective situations, gastric resection can be performed with a mortality of less than 10 per cent, and vagotomy with pyloroplasty can be done with a mortality of less than 5 per cent. Pyloric obstruction or a penetrating duodenal ulcer may be associated with so much inflammatory reaction or chronic induration that vagotomy and gastroenterostomy may be the operation of choice. Gastroenterostomy without vagotomy has been frequently recommended as a satisfactory procedure for peptic ulcer in the aged, especially for the complication of pyloric obstruction.⁵ This operation in the present series was not an adequate procedure to prevent the formation of stomal ulcer even in patients who are in the older age group. There were nine cases of marginal ulcer following gastroenterostomy in patients over 65 years of age, the oldest being 78 years old. The interval between gastroenterostomy and the occurrence of bleeding varied from four months to more than 20 years. In contrast, after adequate gastric resection there was no case of proven marginal ulcer. A possible explanation for these results may be found in the observation that gastric acidity in patients with pyloric obstruction was not found to be uniformly decreased. Measurement of free acid in these patients did not follow any pattern, but varied from hypochlorhydria through normal values to hyperchlorhydria.

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